What is claimed is:

1. A semiconductor optical device, comprising:

an InP substrate;

an active region formed above the InP substrate, said active region being comprised of a quantum well structure;

optical guiding layers each formed on and under said active region; and

clad layers;

wherein on sides in the direction crossing the light-emitting direction, the sides of the active region are buried with semiconductor layers having band gap energy greater than that of a quantum well layer; and

wherein a composition of Al of the quantum well layer is in the group consisting of InGaAlAs compound semiconductor layers, a composition ratio of the Al being in the range of 0 to 0.13, both inclusive.

2. The semiconductor optical device according to claim 1, wherein

a composition ratio of Al of the quantum well layer is in the range of 0.01 to 0.1, both inclusive.

3. The semiconductor optical device according to claim 1, wherein

the InGaAlAs is in the group consisting of compositions A (In: 0.87, Ga: 0, Al: 0.13), B (In: 1.0, Ga: 0, Al: 0), C (In: 0, Ga: 1.0, Al: 0), and D (In: 0, Ga: 0.87, Al: 0.13) in the composition diagram of the four-element based compound semiconductor materials ($In_{1-x-y}Ga_xAl_yAs$).

4. A semiconductor optical device, comprising:

an InP substrate;

an active region formed above the InP substrate, said active region being comprised of a quantum well structure;

optical guiding layers each formed on and under said active region; and

clad layers;

wherein on sides in the direction crossing the light-emitting direction, the sides of the active region are buried with semiconductor layers having band gap energy greater than that of a quantum well layer;

wherein the composition ($In_{1-x-y}Ga_xAl_yAs$) of the quantum well layer is in the group consisting of compositions E (In: 0.52, Ga: 0, Al: 0.48), F (In: 0.53, Ga: 0.47, Al: 0), C (In: 0, Ga: 1.0, Al: 0), and G (In: 0, Ga: 0, Al: 1.0) in the composition diagram of the four-element based compound semiconductor materials; and

wherein the quantum well layer has tensile strain.

5. The semiconductor optical device according to claim 1, wherein

the InGaAlAs layer is in the group consisting of compositions H (In: 0.53, Ga: 0.34, Al: 0.13), F (In: 0.53, Ga: 0.47, Al: 0), C (In: 0, Ga: 1.0, Al: 0), and D (In: 0, Ga: 0.87, Al: 0.13) in the composition diagram of the four-element based compound semiconductor materials ($In_{1-x-y}Ga_xAl_yAs$), and has tensile strain.

6. The semiconductor optical device according to claim 5, wherein

the photoluminescence wavelength from the active region is within the range of 1.25 μm to 1.35μm.

7. The semiconductor optical device according to claim 5, wherein

the InGaAlAs layer is in the group consisting of compositions H (In: 0.53, Ga: 0.34, Al: 0.13), I (In: 0.53, Ga: 0.4, Al: 0.07), J (In: 0.4, Ga: 0.6, Al: 0), K (In: 0.26, Ga: 0.74, Al: 0) and L (In: 0.46, Ga: 0.41, Al: 0.13) in the composition diagram of the four-element based compound semiconductor materials ($In_{1-x-y}Ga_xAl_yAs$); and has tensile strain.

8. The semiconductor optical device according to claim 5,

wherein the photoluminescence wavelength from the active region is within the range of 1.25 μm to 1.35μm; and

wherein the InGaAlAs layer is in the group consisting of compositions H (In: 0.53, Ga: 0.34, Al: 0.13), I (In: 0.53, Ga: 0.4, Al: 0.07), J (In: 0.4, Ga: 0.6, Al: 0), K (In: 0.26, Ga: 0.74, Al: 0) and L (In: 0.46, Ga: 0.41, Al: 0.13) in the composition diagram of the four-element based compound semiconductor materials ($In_{1-x-y}Ga_xAl_yAs$).

9. The semiconductor optical device according to claim 6, wherein

a barrier layer constituting the active region is p-type doped.

10. The semiconductor optical device according to claim 7, wherein

a barrier layer constituting the active region is p-type doped.

11. The semiconductor optical device according to claim 8, wherein

a barrier layer constituting the active region is p-type doped.

12. The semiconductor optical device according to claim 1, wherein

the photoluminescence wavelength from the active

region is within the range of 1.36 μm to 1.49μm.

13. The semiconductor optical device according to claim 1, wherein

the InGaAlAs layer is in the group consisting of compositions O (In: 0.76, Ga: 0.11, Al: 0.13), P (In: 0.5, Ga: 0.5, Al: 0), Q (In: 0.34, Ga: 0.66, Al: 0), and R (In: 0.55, Ga: 0.32, Al: 0.13) in the composition diagram of the four-element based compound semiconductor materials ($In_{1-x-y}Ga_xAl_yAs$).

14. The semiconductor optical device according to claim 1,

wherein the InGaAlAs layer is in the group consisting of the compositions O (In: 0.76, Ga: 0.11, Al: 0.13), P (In: 0.5, Ga: 0.5, Al: 0), Q (In: 0.34, Ga: 0.66, Al: 0), and R (In: 0.55, Ga: 0.32, Al: 0.13) in the composition diagram of the four-element based compound semiconductor materials ($In_{1-x-y}Ga_xAl_yAs$); and

wherein the photoluminescence wavelength from the active region is within the range of 1.36 μm to 1.49μm.

15. The semiconductor optical device according to claim 12, wherein

a barrier layer constituting the active region is p-type doped.

16. The semiconductor optical device according to

claim 13, wherein

a barrier layer constituting the active region is p-type doped.

17. The semiconductor optical device according to claim 14, wherein

a barrier layer constituting the active region is p-type doped.

18. An optical module at least including a package substrate and a semiconductor optical device mounted on the package substrate,

wherein said semiconductor optical device is a semiconductor optical device according to any one of claims 1 to 17.

19. The optical module according to claim 18,

wherein the sealing structure of the optical module is of non-hermitic sealing; and

wherein the semiconductor optical device is at least mounted on the package substrate without using a temperature controller.